

# HIGHLIGHTS

## Cultural landscape recognized as important wildlife habitat at Eisenhower National Historic Site

At Eisenhower National Historic Site (NHS) in Pennsylvania, amidst the layers of cultural fabric dating from prehistoric times when Native Americans lived there, through Confederate Civil War occupation, and up to modern times where President Dwight D. Eisenhower's home is commemorated, there lives an inconspicuous critter commonly known as the least shrew (*Cryptotis parva*). Classified as an insectivore, the fine velvety-furred shrew inhabits meadows, old fields, and moist woodlands. The least shrew is listed in Pennsylvania as an endangered mammal whose occurrence has been noted only three times in the state since 1962. Bone fragments detected in barn-owl pellets were the first indicators alerting local mammalogists to the shrew's presence in the park. Through subsequent inventories, the shrew was discovered at three locations in Eisenhower NHS. As a result of the shrew's presence, the mammal technical committee of the Pennsylvania Biological Survey has designated the park as an "Important Mammals Area." This designation helps focus voluntary

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efforts on identifying sites critical to wild mammals, rare or common, and to draw attention to these sites as tools for teaching people about the mammals' habitat needs.

Once widely distributed throughout the state, least shrews seem to have undergone a precipitous decline over the last 50 years. The reasons for this are unknown, but the decline may be a result of secondary forest growth following farm abandonment combined with a change in farming practices from small-patch rotational agriculture to large-scale, nonrotational crop monocultures.

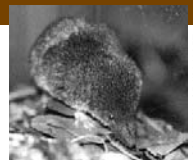
Agricultural practices at Eisenhower NHS preserve the farming and cattle operations of Eisenhower's time; however, they are not intensive and allow small mammals like the least shrew to survive by moving to undisturbed fields each season. This may be the reason the least shrew populations at Eisenhower NHS have had more success than in other areas across the state. The National Park Service is continuing to study Eisenhower NHS and the adjacent Gettysburg National Military Park for the presence of the least shrew and other species of concern.

In addition, part of Eisenhower NHS has been identified by the Pennsylvania Audubon Society as an "Important Bird Area" (southern Adams County grasslands) because it provides critical habitat to bird species of special concern. Species such as the state-endangered loggerhead shrike (*Lanius ludovicianus*) have been observed using the corridor as a nesting area. And other grassland species not listed but infrequently seen, such as the grasshopper sparrow

(*Ammodramus saviarum*) and common bobwhite (*Colinus virginianus*), have been observed by park staff yearly since 1999.

Eisenhower NHS is one example of how a park originally established for its cultural significance has also perpetuated a piece of our natural history. As landscapes across our nation continue to change, even small parks offer habitat where species, common or rare, can persist.

—Zachary Bolitho, natural resource specialist, Gettysburg National Military Park, Pennsylvania; [zachary\\_bolitho@nps.gov](mailto:zachary_bolitho@nps.gov).



At Eisenhower National Historic Site, agricultural practices are not intensive and allow small mammals like the least shrew to survive by moving to undisturbed fields each season. COURTESY OF JIM HART



## Students help restore Pacific Northwest national parks

Nearly 500 students from inner-city Seattle rolled up their sleeves in summer 2004 to help restore natural ecosystems in North Cascades and Mount Rainier National Parks, and San Juan Island National Historical Park. They collected seeds for the North Cascades greenhouse, where native plants are raised for park restoration projects, and they also removed 7 square meters of a non-native geranium. At Mount Rainier, students removed nonnative plants, brushed trails, and prepared plants for the greenhouse. At San Juan Island they planted grasses and monitored their growth, and also mapped the extent of nonnative blackberry in the park. In addition to their hard work, students learned about the



ecosystems they were restoring through fun, interactive lessons prepared and presented by staff of the nonprofit partner of the National Park Service, EarthCorps, and the North Coast and Cascades Research Learning Network. Through evaluations, students reported that they appreciated the opportunity to make a difference and learn about their national parks. One student asked, “Can we do this in Seattle?”

That question has led Seattle City Parks Community Centers to consider how they can develop this program in students’ home communities. Seattle Parks teen leaders have been working with the national park partner, EarthCorps, to develop restoration and stewardship projects in the city parks.

Thanks to funding from the Public Land Corps, this project evolved into a multilayered partnership among the National Park Service, EarthCorps, the City of Seattle, and numerous other nonprofit youth groups. EarthCorps, a nonprofit Seattle-based

restoration group, has been leading this program for the past three years in partnership with the resource education and natural resources staff at the national parks. EarthCorps has extensive experience leading volunteer groups in restoration work, experience that has been key to the success of this program.

For most of the participants and many of the adult leaders, this visit to a national park was their first. Because this project integrates students’ experiences in national parks and their home communities, it provides a good model for developing a network of local and national program partners who promote stewardship values and understanding.

—Lisa Eschenbach, coordinator for the North Coast and Cascades Research Learning Network; National Park Service; Seattle, Washington; [lisa\\_eschenbach@nps.gov](mailto:lisa_eschenbach@nps.gov).



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## High school students participate in inventory and monitoring of bats in the Upper Columbia Basin Network

A group of eight high school science students was brought together for two weeks in July 2004 to study bats in three national monuments in the Upper Columbia Basin Network (UCBN) of the Pacific West Region. The team was organized through collaboration between the network and the Oregon Museum of Science and Industry, in Portland. The team divided its time between the John Day Fossil Beds National Monument (Oregon), Craters of the Moon National Monument and Preserve (Idaho), and Hagerman Fossil Beds National Monument (Idaho). It succeeded in making a significant contribution to the network's inventory and monitoring program and clearly demonstrated that the "tent- and van-" based high school research team model can and should be used in future network inventory and monitoring projects. As UCBN coordinator Lisa Garrett recently remarked, "That science students can have an unparalleled hands-on educational experience and at the same time make real contributions of data and recommendations to NPS resource professionals is really exciting for us."

Students, some of whom traveled from as far away as Texas and Illinois to participate, were trained in the various methods and life history topics required to study bats in the Pacific Northwest. They quickly became proficient at important research tasks, including the setup and



Two bat team students use calipers to measure the forearm length of a long-eared myotis in Craters of the Moon National Monument and Preserve. NPS PHOTO



Oregon Museum of Science and Industry bat research team students demonstrate the Anabat bat call recording equipment to Hagerman Fossil Beds operations chief Fran Gruchy. NPS PHOTO

operation of mist nets, acoustic monitoring equipment, and the identification and measurement of captured bats. Students concluded the program by assembling a final report that was submitted to each of the monuments and the network, complete with tables and maps generated in Microsoft Excel and ArcView GIS.

Notable findings from the team's work include first-time documentation of eight species of bats in and around Hagerman Fossil Beds, including the Townsend's big-eared bat (*Corynorhinus townsendii*), western pip-

istrelle (*Pipistrellus hesperus*), and pallid bat (*Antrozous pallidus*); addition of the fringed myotis (*Myotis thysanodes*) and hoary bat (*Lasiurus cinereus*) to the Craters of the Moon inventory species list; and monitoring results from pallid bat and Townsend's big-eared bat maternity roosts in John Day Fossil Beds and Craters of the Moon. Information from the roost monitoring is being used by the network as it begins to prioritize vital signs and consider

possible protocols for vital signs monitoring.

The Upper Columbia Basin Network is planning to organize a weed and rare plant mapping research team with the Oregon Museum of Science and Industry in 2005.

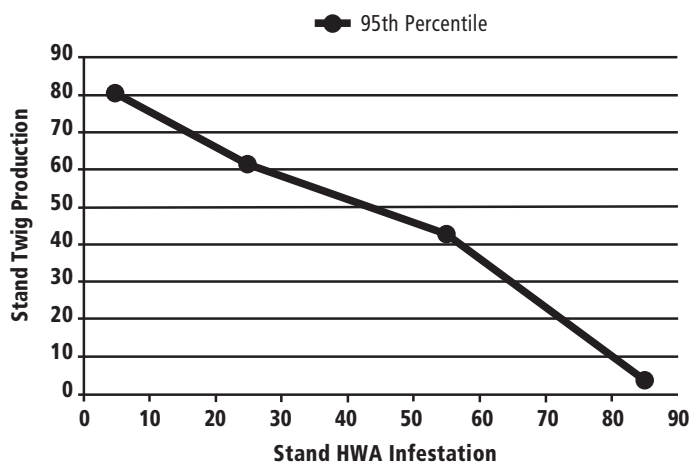
—Tom Rodhouse, ecologist, NPS Upper Columbia Basin Network, University of Idaho; [thomasr@uidaho.edu](mailto:thomasr@uidaho.edu).



## Update on hemlock woolly adelgid and the management of hemlock decline at Delaware Water Gap

Past studies at Delaware Water Gap National Recreation Area (Pennsylvania and New Jersey) have shown that an alien insect, hemlock woolly adelgid (HWA, *Adelges tsugae*), has been causing decline of eastern hemlock forests, leading to the loss of native biodiversity, and opening the way for invasions of alien plants. New and ongoing studies continue to expand our understanding and documentation of these changes. In addition, we are making progress in developing strategies and techniques to address important management issues associated with these changes.

**Monitoring**—Annual monitoring of hemlock forest plots has documented the spread of HWA infestations throughout hemlock stands, and consequent declines in stand health. Initial HWA infestations only occur on a few branches of a few trees in a stand, and have little or no effect on overall hemlock stand health. As infestations increase and spread to more trees, they reduce the annual production of new twigs in the stand, eventually nearly eliminating it (fig. 1).

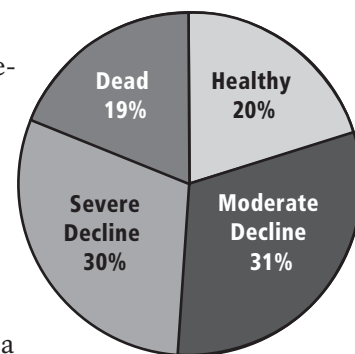


**Figure 1.** The graph documents decline in hemlock stand twig production with increasing levels of HWA infestation at Delaware Water Gap National Recreation Area during the 10-year period from 1995 to 2004. Data collected from monitoring plots in seven hemlock stands.

**Research**—Dr. Denise Royle, USDA Forest Service, used Landsat Thematic Mapper satellite imagery to quantify and analyze hemlock forest decline on a pixel-by-pixel (30-m × 30-m) basis throughout the national recreation area. This analysis has provided useful information about the spatial distribution, rate, and extent of hemlock decline and indicated that, as of 2002, approximately half

of the hemlocks in the recreation area were dead or in severe decline, and half were healthy or in moderate decline (fig. 2). Forest plot data, collected “on the ground,” indicate similar levels of hemlock decline.

In 2003, Anne Eschtruth, a doctoral student at the University of California–Berkeley, initiated research in the park to determine if and how alien plant invasions are facilitated by hemlock decline, browsing by white-tailed deer, and surrounding alien plant populations. Results indicate that invasive alien plants are much more common and abundant in hardwood stands than healthy hemlock stands, but become more common and abundant in declining hemlock stands.



**Figure 2.** The pie chart shows health of hemlock forests in Delaware Water Gap National Recreation Area in 2002, as indicated by satellite (Landsat) image analysis.

**Management**—In 2003 the national recreation area hosted an interdisciplinary workshop to gain expertise in developing strategies and techniques to manage declining hemlock forests. The workshop focused on developing (1) management plans for several important visitor use areas already experiencing severe hemlock decline and mortality, and (2) strategic goals and priorities for all of the 140 hemlock stands covering some 2,800 acres (1,134 ha) in the park. The NPS restoration ecologist assisted with the workshop, and representatives from the USDA Forest Service, the states of Pennsylvania and Connecticut, Rutgers University, and The Nature Conservancy contributed expertise in silviculture, plant ecology, landscape management, forest pest management, GIS, and remote sensing. A summary of the workshop, available from the author, was completed, and detailed site management plans are in preparation.

—Richard A. Evans, ecologist, Delaware Water Gap National Recreation Area, Pennsylvania; [richard\\_evans@nps.gov](mailto:richard_evans@nps.gov).

**Editor's Note:** Readers may find the USDA Forest Service publication “Eastern hemlock forests: Guidelines to minimize the impacts of hemlock woolly adelgid” of interest; it is available at [www.fs.fed.us/na/morgantown/fhp/hwa/pub/guidelines\\_to\\_minimize\\_hwa\\_impacts\\_pub.pdf](http://www.fs.fed.us/na/morgantown/fhp/hwa/pub/guidelines_to_minimize_hwa_impacts_pub.pdf).

